



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,128	01/16/2004	Yong-duk Lee	1793.1162	5036
21171	7590	11/01/2005		
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			EXAMINER GARCIA JR, RENE	
			ART UNIT 2853	PAPER NUMBER

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/758,128	Applicant(s) LEE, YONG-DUK	
	Examiner Rene Garcia, Jr.	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-32 is/are allowed.
- 6) ☒ Claim(s) 33, 36 and 38-42 is/are rejected.
- 7) ☒ Claim(s) 34, 35, 37 and 43 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claims 1, 6, 7, 12, 13, 18-21, 26, 31 and 32 recite the limitation “the 1th nozzle”. There is insufficient antecedent basis for this limitation in the claims; Claims 12, 18 and 20 recite the limitation “the mth nozzle”. There is insufficient antecedent basis for this limitation in the claims; Claim 42 recites the limitation "the ninth control signal" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Objections

2. Claims 1 and 12 are objected to because of the following informalities: Line 8 - spelling error “though” should be “through”; claim 12, line 7 – “printedthe” space required. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 33 and 38-42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gast et al. (US 6,076,915) in view of Yoshida et al. (US 6,390,698).

Gast et al. disclose the following claimed limitations:

Art Unit: 2853

*regarding claim 33, method of correcting a printing error in an inkjet printer/10/ (ABS) having a printer head/60/, on which nozzles/64/ are provided, and a feed roller/30/, the method comprising: (fig. 1)

*moving the print paper/media sheet, 12/ a first distance, and printing a reference line/**first portion test pattern, 105/** at a predetermined interval (figs. 1 and 10)

*moving the print paper/12/ on which the reference line/**first portion test pattern, 105/** is printed a second distance, and printing comparison lines/**second portion test pattern, 104/** at a predetermined interval (fig. 10; col. 9, lines 34-48)

*detecting an error distance between the reference line/105/ and one of the comparison lines/104/ (col. 10, lines 29-49)

*correcting a distance that the print paper/12/ is moved according to the detected error distance (col. 10, lines 44-49)

*regarding claim 39, apparatus for correcting a printing error in an inkjet printer/10/ (ABS) having a printer head/60/, on which nozzles/64/ are provided, and a feed roller/30/, the apparatus comprising: (fig. 1)

* fourth control signal to move the print paper/media sheet, 12/ in response to a third control signal (col. 9, lines 41-43), seventh control signal to move the print paper/12/ by a corrected distance in response to a sixth control signal (col. 10, lines 44-49)

*printer head/60/ ejection controller which outputs the third control signal to print a reference line/**first portion test pattern, 105/** in response to the second control signal, and a

fifth control signal to print comparison lines/**second portion test pattern, 104/** in response to the fourth control signal (col. 9, lines 34-48) (fig. 10)

*error distance detector which detects an error distance between the reference line and one of the comparison lines in response to the fifth control signal, and outputs the result of the detection as the sixth control signal (col. 10, lines 29-49)

*regarding claim 41, reference line match detector which detects if one of the comparison lines is a comparison line matching the reference line, and outputs the result of the detection as an eighth control signal (col. 10, lines 33-36)

*nozzle distance calculator which calculates a nozzle distance between the nozzle that printed the reference line/**105/** and the nozzle that printed the comparison line/**104/** matching the reference line/**105/**, in response to the eighth control signal, and outputs the calculated nozzle distance as a ninth control signal (col. 10, lines 44-49)

*regarding claim 42, ninth control signal indicates the error distance (col. 10, lines 44-49)

Gast et al. does not disclose the following claimed limitations:

*regarding claim 33, determining if a trailing end of a print paper has escaped from the feed roller which periodically moves the print paper

*if the trailing end of the print paper is determined to have escaped from the feed roller

*regarding claim 38, exhaust roller moves the print paper the second distance

*regarding claim 39, print paper escape detector which detects whether a trailing end of a print paper has escaped from the feed roller which periodically moves the print paper, and outputs the result of the detection as a first control signal

* feed roller driving controller which outputs a second control signal to move the print paper in response to the first control signal

*regarding claim 40, exhaust roller to move the print paper if a trailing end of a print paper has escaped from the feed roller

Yoshida et al. disclose the following:

*regarding claim 33, determining if a trailing end of a print paper/50/ has escaped from the feed roller/64/ which periodically moves the print paper/50/ (fig. 7 & 10) for the purpose of discharging the printed paper

*if the trailing end of the print paper/50/ is determined to have escaped from the feed roller/64/ (fig. 7 & 10) for the purpose of discharging the printed paper

*regarding claim 38, exhaust roller/**paper discharging roller, 68/** moves the print paper/50/ the second distance (col. 5, lines 11-20) for the purpose of feeding the paper

*regarding claim 39, print paper/50/ escape detector/**sensor,15/** which detects whether a trailing end of a print paper/50/ has escaped from the feed roller/64/ which periodically moves the print paper/50/, and outputs the result of the detection as a first control signal (figs. 7 & 10; col. 5, lines 11-20; col. 3, lines 45-47) for the purpose of discharging the printed paper

Art Unit: 2853

* feed roller/65/ (examiner takes position that a different feed roller is disclosed – different from previously disclosed) driving controller/2/ (col. 3, lines 33-34) which outputs a second control signal to move the print paper/50/ in response to the first control signal (col. 5, lines 11-20) for the purpose of feeding the paper

*regarding claim 40, exhaust roller/68/ to move the print paper/50/ if a trailing end of a print paper/50/ has escaped from the feed roller/64/ (col. 5, lines 23-30) for the purpose of discharging the printed paper

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a print paper escape detector which detects whether a trailing end of a print paper has escaped from the feed roller which periodically moves the print paper, and outputs the result of the detection as a first control signal; feed roller driving controller which outputs a second control signal to move the print paper in response to the first control signal; and exhaust roller to move the print paper if a trailing end of a print paper has escaped from the feed roller as taught by Yoshida et al. into Gast et al. for the purposes of: discharging the printed paper; and feeding the paper.

5. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gast et al. (US 6,076,915) as modified by Yoshida et al. (US 6,390,698) as applied to claim 33 above, and further in view of Bloomberg (US 2002/0070998)1.

Gast et al. as modified by Yoshida et al. disclose the claimed limitations except for the following:

*regarding claim 36, second distance is equal to the first distance

Bloomberg disclose the following:

*regarding claim 36, second distance/offset/ is equal to the first distance/offset/ (paragraph 0025) for the purpose of reducing the effect of any misalignment in the location s of the various inkjets of the printhead.

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to utilize the first distance is half the width of the printer head; and second distance is equal to the first distance as taught by Bloomberg into Gast et al. as modified by Yoshida et al. for the purpose of for the purpose of reducing the effect of any misalignment in the location s of the various inkjets of the printhead.

Allowable Subject Matter

6. Claims 1-32 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

7. The primary reason for the allowance of claims 1 and 7 is the inclusion of the method steps being printing a reference line at a predetermined interval using a k^{th} nozzle ($1 \leq k \leq N$) from among the 1^{st} through N^{th} nozzles; printing comparison lines at a predetermined interval using (the $N+1$)th through $2N^{\text{th}}$ nozzles; and detecting an error distance between the reference line and one of the comparison lines printed by the l^{th} nozzle ($N+1 \leq l \leq 2N$), the l^{th} nozzle being disposed at a position corresponding to the k th nozzle among the $(N+1)^{\text{th}}$ through $2N^{\text{th}}$ nozzles. It is these steps found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

8. The primary reason for the allowance of claims 13 and 19 is the inclusion of the limitations being for correcting a printing error in an inkjet printer: printing a reference line using a k^{th} nozzle ($1 \leq k \leq N$) from among the 1^{st} through N^{th} nozzles in response to the second control signal; a fifth control signal to print comparison lines using the $(N+1)^{\text{th}}$ through $2N^{\text{th}}$ nozzles in response to the fourth control signal; and an error distance detector which detects an error distance between the reference line and one of the comparison lines printed by the l^{th} nozzle ($N+1 \leq l \leq 2N$), the l^{th} nozzle being disposed at a position corresponding to the k^{th} nozzle among the $(N+1)^{\text{th}}$ through $2N^{\text{th}}$ nozzles, in response to the fifth control signal, and outputs the result of the detection as the sixth control signal. It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

9. The primary reason for the allowance of claim 21 is the inclusion of the method steps being if the trailing end of the print paper is determined to have escaped from the feed roller; moving the print paper the width of the printer head divided by S , and printing a reference line at a predetermined interval using a k^{th} nozzle ($1 \leq k \leq N$) from among the 1^{st} through N^{th} nozzles; moving the print paper on which the reference line is printed the width of the printer head divided by S , and printing comparison lines at a predetermined interval using the $(N+1)^{\text{th}}$ through $2N^{\text{th}}$ nozzles; and detecting an error distance between the reference line and one of the comparison lines printed by the l^{th} nozzle ($N+1 \leq l \leq 2N$), the l^{th} nozzle being disposed at a position corresponding to the k^{th} nozzle among the $(N+1)^{\text{th}}$ through $2N^{\text{th}}$ nozzles. It is these steps found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Art Unit: 2853

10. The primary reason for the allowance of claim 26 is the inclusion of the method steps being if the trailing end of the print paper is determined to have escaped from the feed roller, moving the print paper the width of the printer head divided by S , and printing a reference line at a predetermined interval using a k^{th} nozzle ($1 \leq k \leq N$) from among the 1^{st} through N^{th} nozzles; moving the print paper on which the reference line is printed the width of the printer head divided by $S \pm$ the nozzle distance between neighboring nozzles divided by p , in which p is a positive integer greater than 0, and printing comparison lines at a predetermined interval using the $(N+1)^{\text{th}}$ through $2N^{\text{th}}$ nozzles; and detecting an error distance between the reference line and a one of the comparison line printed by the l^{th} nozzle ($N+1 \leq l \leq 2N$), the l^{th} nozzle being disposed at a position corresponding to the k^{th} nozzle among the $(N+1)^{\text{th}}$ through $2N^{\text{th}}$ nozzles. It is these steps found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

11. The primary reason for the allowance of claim 31 is the inclusion of the limitations being for correcting a printing error in an inkjet printer: a printer head ejection controller which outputs the twenty-second control signal to print a reference line using a k^{th} nozzle ($1 \leq k \leq N$) from among the 1^{st} through N^{th} nozzles in response to the twenty-first control signal, and a twenty-fourth control signal to print comparison lines using the $(N+1)^{\text{th}}$ through $2N^{\text{th}}$ nozzles in response to the twenty-third control signal; and an error distance detector which detects an error distance between the reference line and one of the comparison lines printed by l^{th} nozzle ($N+1 \leq l \leq 2N$), the l^{th} nozzle being disposed at a position corresponding to the k^{th} nozzle among the $(N+1)^{\text{th}}$ through $2N^{\text{th}}$ nozzles, in response to the twenty-fourth control signal, and outputs the result of the

detection as the twenty-fifth control signal. It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

12. The primary reason for the allowance of claim 32 is the inclusion of the limitations being for correcting a printing error in an inkjet printer: a printer head ejection controller which outputs the twenty-ninth control signal to print a reference line using a k^{th} nozzle ($1 \leq k \leq N$) from among the 1^{st} through N^{th} nozzles in response to the twenty-eighth control signal, and a thirty-first control signal to print comparison lines using the $(N+1)^{\text{th}}$ through $2N^{\text{th}}$ nozzles in response to the thirtieth control signal; and an error distance detector which detects an error distance between the reference line and one of the comparison lines printed by l^{th} nozzle ($N+1 \leq l \leq 2N$), the l^{th} nozzle being disposed at a position corresponding to the k^{th} nozzle among the $(N+1)^{\text{th}}$ through $2N^{\text{th}}$ nozzles, in response to the thirty-first control signal, and outputs the result of the detection as the thirty-second control signal. It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

13. Claims 37, 34 and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claim 34 is the inclusion of the method steps being the first distance is a percentage of the width of the printer head. It is this step found in

Art Unit: 2853

each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 37 is the inclusion of the method steps being the second distance is equal to the first distance \pm the distance between neighboring nozzles divided by an integer p . It is this step found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 43 is the inclusion of the limitations being for correcting a printing error in an inkjet printer: distance calculation corrector which adds or deducts the nozzle distance between neighboring nozzles divided by a positive integer p to or from the calculated nozzle distance, and outputs the added or deducted nozzle distance as a tenth control signal indicating the error distance. It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rene Garcia, Jr. whose telephone number is (571) 272-5980. The examiner can normally be reached on M-F 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rene Garcia Jr
22 October 2005



K. FEGANS
PRIMARY EXAMINER